

Claims

What is claimed is:

1. A method of fabricating an optical component comprising the steps of:
providing a detector array having more detectors than a number of known channels;
providing an input port and a dispersive element within a waveguide structure, the dispersive element disposed for receiving light provided at the input port and for dispersing the light onto the detector array, the light dispersed other than as channelised data within the known channels; and,
determining an operator for transforming spectral data sensed by the detector array into values indicative of intensity of light within each of the predetermined wavelength ranges corresponding to the known channels.
2. A method of fabricating an optical component as defined in claim 1 wherein the dispersive element is for dispersing the light onto a plane and wherein the detector array is disposed adjacent the plane.
3. A method of fabricating an optical component according to claim 2 wherein the detector array has detectors along a length substantially exceeding the length of the light within the known channels dispersed along the plane.
4. A method of fabricating an optical component according to claim 3 wherein the operator is dependent upon array location adjacent the plane to correct for tolerances in array placement.
5. A method of fabricating an optical component according to claim 4 wherein the operator is dependent upon optical variations in the waveguide and included structures for compensating therefor.
6. A method of fabricating an optical component according to claim 5 wherein the operator accommodates variable data provided in response to external sensor data.

7. A method of fabricating an optical component according to claim 6 comprising a temperature sensor for providing the external sensor data.
8. A method of fabricating an optical component according to claim 5 wherein the operator is dependent upon input port location.
9. A method of fabricating an optical component according to claim 4 wherein the operator accommodates variable data provided in response to external sensor data.
10. A method of fabricating an optical component according to claim 9 comprising a temperature sensor for providing the external sensor data.
11. A method of fabricating an optical component according to claim 4 wherein the operator is dependent upon input port location.
12. A method of fabricating an optical component according to claim 3 wherein the detector array is positioned adjacent the plane for receiving most of the dispersed light dispersed while the component operates within any temperature within a predetermined temperature range.
13. A method of fabricating an optical component according to claim 12 wherein a detector at each of two opposing ends of the array of detectors is positioned to receive no light in use at a temperature central to the temperature range.
14. A method of fabricating an optical component according to claim 1 wherein the detector array comprises at least a number of detectors equal to three times the number of known channels.
15. A method of fabricating an optical component according to claim 14 wherein the detector array comprises at least a number of detectors equal to three times the number of known channels plus two further detectors.

16. A method of fabricating an optical component according to claim 1 wherein the dispersive element comprises an array waveguide grating.
17. A method of fabricating an optical component according to claim 16 wherein the detector array is adjacent an unguided portion of the array waveguide grating and wherein the component is absent a plurality of waveguides exiting the array waveguide grating.
18. A method of fabricating an optical component according to claim 17 wherein the input port is adjacent an unguided portion of the array waveguide grating and wherein the component is absent an integrated waveguide for guiding light into the array waveguide grating.
19. A method of fabricating an optical component according to claim 16 wherein the input port is adjacent an unguided portion of the array waveguide grating and wherein the component is absent an integrated waveguide for guiding light into the array waveguide grating.
20. A method of fabricating an optical component according to claim 1 wherein the operator is determined by a digital signal processor associated with the optical component.
21. A method of fabricating an optical component according to claim 20 wherein the optical component comprises the digital signal processor.
22. A method of fabricating an optical component according to claim 20 wherein the operator is determined independently for each optical component.
23. A method of fabricating an optical component according to claim 22 wherein the optical component is an optical wavelength monitor.
24. A method of fabricating an optical component according to claim 1 wherein the optical component is an optical wavelength monitor.

25. A method of fabricating an optical component according to claim 1 wherein the detector array has detectors along a length substantially exceeding the length of the dispersed light within the known channels.
26. A method of fabricating an optical component according to claim 25 wherein the operator is dependent upon array location to correct for tolerances in array placement.
27. A method of fabricating an optical component according to claim 26 wherein the transfer function is dependent upon optical variations in the waveguide and included structures for compensating therefor.
28. A method of fabricating an optical component according to claim 27 wherein the operator accommodates variable data provided in response to external sensor data.
29. A method of fabricating an optical component according to claim 28 comprising a temperature sensor for providing the external sensor data.
30. A method of fabricating an optical component according to claim 27 wherein the operator is dependent upon input port location.
31. A method of fabricating an optical component according to claim 26 wherein the operator accommodates variable data provided in response to external sensor data.
32. A method of fabricating an optical component according to claim 31 comprising a temperature sensor for providing the external sensor data.
33. A method of fabricating an optical component according to claim 26 wherein the operator is dependent upon input port location.

34. A method of fabricating an optical component according to claim 25 wherein the detector array is positioned for receiving most of the dispersed light dispersed while the component operates within any temperature within a predetermined temperature range.

35. A method of fabricating an optical component according to claim 34 wherein a detector at each of two opposing ends of the array of detectors is positioned to receive no light in use at a temperature central to the temperature range.

36. A method of fabricating an optical component having a input endface comprising the steps of:

providing a dispersive element within a waveguide structure, the dispersive element disposed for receiving light provided at a input endface of the waveguide structure and for dispersing the light onto an output endface of the waveguide structure, the light dispersed other than as channelised data within known channels;

affixing a detector array for sensing data having more detectors than a number of the known channels to the output endface of the waveguide;

electrically coupling the detector array for providing sensed data to a processor for processing thereof; and,

determining a mathematical operator for transforming data sensed by the detector array into values indicative of intensity of light within each of the predetermined wavelength ranges corresponding to the known channels, the operator accommodating imprecise placement of the detector array and variations in a location on the input endface where light is received.

37. A method of fabricating an optical component according to claim 36 wherein the input endface and the output endface are a same endface.

38. A method of fabricating an optical component according to claim 36 wherein the input endface and the output endface are different endfaces.

39. A method of fabricating an optical component according to claim 36 wherein dispersive element is an array waveguide grating.

40. A method of fabricating an optical component according to claim 39 wherein the input endface couples light into an unguided region of the dispersive element.

41. An optical component comprising:

an input port;

a detector array for sensing data and having more detectors than a number of known channels;

a waveguide structure including a dispersive element within the waveguide structure, the dispersive element disposed for receiving light provided at the input port and for dispersing the light onto the detector array, the light dispersed other than as channelised data within the known channels; and

a processor for determining an operator for transforming data sensed by the detector array into values indicative of intensity of light within each of the predetermined wavelength ranges corresponding to the known channels, wherein the operator accommodates imprecise placement of the detector array.

42. An optical component according to claim 41 comprising a temperature sensor for providing external sensor data and wherein the operator accommodates the external sensor data.

43. An optical component according to claim 42 wherein the detector array is positioned adjacent the dispersive element for receiving most of the dispersed light dispersed while the component operates within any temperature within a predetermined temperature range.

44. An optical component according to claim 43 wherein a detector at each of two opposing ends of the array of detectors is positioned to receive no light in use at a temperature central to the temperature range.

45. An optical component according to claim 41 wherein the input port location is determined during manufacture based on a location wherein light is coupled into an unguided region of the dispersive element.

46. An optical component according to claim 45 wherein the dispersive element is an array waveguide grating.
47. An optical component according to claim 41 wherein the detector array comprises at least a number of detectors equal to three times the number of known channels.
48. An optical component according to claim 47 wherein the detector array comprises at least a number of detectors equal to three times the number of known channels plus two further detectors.
49. An optical component according to claim 41 wherein the dispersive element comprises an array waveguide grating.
50. An optical component according to claim 49 wherein the detector array is disposed adjacent an unguided portion of the array waveguide grating and wherein the optical component is absent a plurality of integrated waveguides exiting the array waveguide grating.
51. An optical component according to claim 50 wherein the input port is adjacent an unguided portion of the array waveguide grating and wherein the component is absent an integrated waveguide for guiding light into the array waveguide grating.
52. An optical component according to claim 49 wherein the input port is adjacent an unguided portion of the array waveguide grating and wherein the component is absent an integrated waveguide for guiding light into the array waveguide grating.
53. An optical component according to claim 41 wherein the processor comprises a digital signal processor associated with the optical component.
54. An optical component according to claim 41 wherein the optical component includes an optical wavelength monitor.

55. A method of fabricating an optical component according to claim 41 wherein the detector array has detectors along a length substantially exceeding the length of the dispersed light within the known channels.

56. An optical component comprising:

a waveguide structure including:

an input endface;

an output endface; and,

a dispersive element, the dispersive element disposed for receiving light provided near a predetermined location on the input endface of the waveguide structure and for dispersing the light about a location on the output endface near a predetermined location, the light dispersed other than as channelised data within known channels;

a detector array having more detectors than a number of the known channels disposed adjacent the output endface about the predetermined location for providing data based on detected light; and,

a processor for determining an operator, for receiving the data and for transforming the data -- using the operator -- into values indicative of intensity of light within each of the predetermined wavelength ranges corresponding to the known channels, the operator for use in correcting for at least one of imprecise placement of the detector array and variations in a location on the input endface where light is received and, the processor also for using the mathematical operator to transform received data into values indicative of intensity of light within each of the predetermined wavelength ranges corresponding to the known channels.